REMARKS

Reconsideration and allowance of this application are respectfully requested in light of the above amendments and the following remarks.

The specification has been amended to correct a typographical error. No new matter is introduced by the amendment of the specification.

Claims 1-3, 5, and 6 have been amended, claim 4 has been cancelled, and claims 7 and 8 have been newly added. Support for the amendments is provided at least in the original claims and the specification on page 13, lines 18-30.

Claims 1-3 were rejected, under 35 USC §102(e), as being anticipated by Chan et al. (US 6,504,634). Claim 4 was rejected, under 35 USC §103(a), as being unpatentable over Chan in view of Keller et al. (US 6,690,888). Claim 5 was rejected, under 35 USC §103(a), as being unpatentable over Chan in view of Ikeda et al. (US 7,016,612). Claim 6 was rejected, under 35 USC §103(a), as being unpatentable over Chan in view of Graves et al. (US 2002/0196506). To the extent the rejections may be deemed applicable to the amended claims, the Applicants respectfully traverse as follows.

The features recited in original claim 4 have been integrated into claim 1. It is submitted that Chan and Keller,

considered alone or together, fail to teach or suggest the features now recited in claim 1 of:

(1) a rough optical axis adjustment that substantially equalizes the levels of an optical signal received in a multitude of light-receiving elements and

(2) a fine optical axis adjustment that searches a relatively wide region when light-receiving level information is relatively small and searches a relatively narrow region when the light-receiving level information is relatively large.

Claim 1 defines an optical wireless communication system having a transmitter and a receiver. The transmitter transmits a first optical signal to the receiver, which determines a light-receiving level of the first optical signal. The receiver transmits to the transmitter a second optical signal that carries information of the determined light-receiving level.

The transmitter receives, in each of a multitude of light-receiving elements, the second optical signal at a level corresponding to a difference in direction between an optical axis of the receiver and an optical axis of the transmitter. The transmitter executes a rough optical axis adjustment to substantially equalize the levels of the second optical signal received in the multitude of light-receiving elements.

After the rough optical axis adjustment is accomplished, the transmitter executes a fine optical axis adjustment based on the level of the first optical signal. In performing the fine optical adjustment, the transmitter searches a relatively wide region when the level of the first optical signal is relatively small and searches a relatively narrow region when the level of the first optical signal is relatively large.

Because the transmitter executes the rough optical axis adjustment to substantially equalize the levels of the second optical signal received in the multitude of light-receiving elements, the system can quickly accomplish an optical axis adjustment comprising the rough and fine optical axis adjustments. Moreover, because the transmitter executes the fine optical axis adjustment by searching a relatively wide region when the level of the first optical signal is relatively small and by searching a relatively narrow region when the level of the first optical signal is relatively large, the system can efficiently accomplish the fine optical axis adjustment.

Chan is cited in the Office Action for teaching a system and method for controlling the power of an optical transmitter. Chan is also cited for teaching roughly pointing the beam of the transmitter to a receiver node (see Office Action page 4, lines 3-4).

However, Chan fails to suggest the claimed feature of a rough optical axis adjustment wherein levels of an optical signal received in a transmitter's multitude of light-receiving elements are substantially equalized to one another, and the Office Action does not seem to propose otherwise. Instead, the Office Action merely proposes that Chan discloses roughly pointing a transmitter's beam (see Office Action page 4, lines 3-4). And Keller is not cited in the Office Action for supplementing the teachings of Chan in this respect.

Keller is cited for teaching a method of establishing and maintaining an optical, open-air communication link in which a receiver lies within the field of view of a transmitter (i.e., a light source). The transmitter scans an optical signal in an angular pattern, such as a spiral, so that the transmitted light will scan all positions in the transmitter's field of view over a period of time (Keller col. 10, lines 12-26). After the receiver detects a signal, a smaller scan pattern, of a spiral centered on the last detection event, is executed (col. 10, lines 35-37).

In brief, Keller merely discloses that when the transmitted light crosses the receiver, a detected event occurs, and the time and detected light intensity for this event are recorded in the receiver and sent to the transmitter. The transmitter determines a position where the receiver is located and begins a smaller

scan centered on this position. When the transmitted light crosses the receiver again during the smaller scan, such that the intensity of the detected light is greater than that of the previous detection event, the time and light intensity of this new event are sent from the receiver to the transmitter. If the intensity of light of the later-detected event is greater than the intensity of the light detected in the previous event, a new scan is repeated, so as to narrow the search area in each repetition (see col. 10, lines 45-67). A sufficient number of repetitions are executed such that the scan area is significantly smaller than the angular spread of the transmitter light source. In this case, the center of the scan is the optimum angle for data transmission and the transmitter begins transmitting data (see col. 11, lines 11-21).

As is apparent from the above description of Keller's disclosure, Keller fails to teach or suggest the claimed features of executing a fine optical axis adjustment by searching a relatively wide region when the level of an optical signal is relatively small and by searching a relatively narrow region when the level of the optical signal is relatively large. And, the Office Action acknowledges that Chan does not suggest these features (see Office Action section 4, lines 6-9).

In accordance with the discussion above, the Applicants respectfully submit that the applied references, considered individually or in combination, do not render obvious the subject matter defined by claim 1. More specifically, Chan and Keller do not teach or suggest the claimed features of:

(1) a rough optical axis adjusting unit that executes a rough optical axis adjustment to substantially equalize the levels of an optical signal received in a transmitter's multitude of light-receiving elements and

(2) a fine optical axis adjusting unit that searches a relatively wide region when light-receiving level information is relatively small and searches a relatively narrow region when the light-receiving level information is relatively large.

Thus, the proposal in the office action to modify Chan's system based on Keller's teachings would not achieve an efficient fine optical axis adjustment as is achieved with the present claimed subject matter. Therefore, the rejections applied to claims 2, 3, 5, and 6 are overcome, and the Applicants submit that allowance of claim 1, and all claims dependent therefrom, is warranted.

In view of the above, it is submitted that this application is in condition for allowance and a notice to that effect is respectfully solicited.

If any issues remain which may best be resolved through a telephone communication, the Examiner is requested to telephone the undersigned at the local Washington, D.C. telephone number listed below.

Respectfully submitted,

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JEL/DWW/att

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